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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/647,666	09/29/2000	Mikael Isaksson	S1022/8536	1017
7590 12/14/2004			EXAMINER	
James H Morris Wolf Greenfield & Sacks Federal Reserve Plaza 600 Atlantic Avenue Boston, MA 02210-2211			FERRIS, DERRICK W	
			ART UNIT	PAPER NUMBER
			2663	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/647,666

Applicant(s)

ISAKSSON ET AL.

Examiner

Derrick W. Ferris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. **Claims 1-26** as amended are still in consideration for this application. Applicant has amended claims **1, 7, 13, 14, 19, and 25**.
2. Examiner **withdraws** the obviousness rejection to *Chow* in view of *Zimmerman* for Office action filed **12/18/2003**. In addressing applicant's arguments in the response filed **06/21/2004**, applicant argues the following amended limitation wherein the transmission direction in at least one frequency band in the upper part of the spectrum of the wideband transmission system is not switched, see e.g., first full paragraph on page 8 of applicant's remarks. Examiner notes the above limitation is inherently taught by the references in combination. As the inference might not be clear, the examiner has replaced the obviousness rejection by adding a new reference that teaches the above inference. In particular, *Zimmerman* teaches that ISDN (i.e., TDD) has a frequency spectrum up to around 200 KHz and ADSL (i.e., FDD) has a frequency spectrum prior to 200 KHz and past 200 KHz such that some parts of ADSL overlap. In particular, see figure 2 on page 574 and the sentence above the figure. Thus figure 2 shows that ISDN (i.e., TDD) and ADSL (i.e., FDD) overlap. Applicant has further amended the claims to recite more than two frequency bands for ADSL (i.e., a wideband transmission). Not clearly taught by the reference that is inferred by the examiner (and also probably by the applicant at page 4, lines 9-14 of applicant's specification) is the signaling information for ADSL (i.e., the subchannels) which is usually above 200 KHz. "A Multi-drop In-house ADSL Distribution Network" to *Chow* teaches the above inference in figure 3 on page 457. Hence there are bands outside the overlapping area that will not be effected by Near End

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Cross Talk (NEXT) and thus do not require switching the transmit/receive directions as taught by U.S. Patent 6,408,033 B1 to *Chow* (i.e., the references in combination). Hence the subchannels start at 1.5 MHz, see table 1 on page 457 of *Chow II*, which are above 200 KHz and are thus not impacted by NEXT interference. In particular, U.S. Patent 6,408,033 B1 to *Chow* teaches combining ISDN (i.e., TDD) and ADSL (i.e., FDD) at column 18, line 64 where the bit allocations between the upstream and down streams are adjusted based on e.g., NEXT interference, see e.g., column 19, lines 15-30. Specifically, U.S. Patent 6,408,033 B1 to *Chow* teaches that different channels can have different bit allocations, see e.g., column 19, lines 40-47 such that the channels above the crosstalk interference frequency spectrum would not have to be adjusted for NEXT (i.e., note that the *Chow* reference teaches adjusting bit allocations for the cross talk region which only overlaps at the lower end of the frequency spectrum).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,408,033 B1 to *Chow et al.* ("*Chow*") in view of "Achievable rates vs. Operating Characteristics of Local Loop Transmission: HDSL, HDSL2, ADSL, and VDSL" to *Zimmerman* and "A Multi-drop In-house ADSL Distribution Network" to *Chow et al.* ("*Chow II*").

As to **claim 1**, *Chow* discloses a hybrid system using both TDD and FDD (e.g., see column 18, line 64 - column 20, line 19). In particular, figure 13a shows an ISDN TDD system and figure 13b shows an ADSL FDD system where the two systems overlap. Specifically, in reference to applicant's figure 1, *Chow* teaches that the uplink 1306 for the first band contains the most cross-talk interference/noise (e.g., see column 19, lines 15-29) similar to applicant's shaded portion shown in figure 1 because of the ISDN signal. *Chow* teaches a method and apparatus for varying the bit allocations in frames for either a TDD or FDD system. Specifically, "In the case of mixed transmission schemes (e.g., ISDN and ADSL), by using these multiple bit allocations for each transmission direction, cross talk interference can be reduced" as disclosed at column 20, lines 14-18. Hence as shown, e.g., in figures 3c and 3d, *Chow* teaches a way to minimize the transmission of bit rates which essentially teaches switching the transmission directions in the frequency so that the lower band of the wide band transmission system always transmits in the same direction as the time division duplex system. The limitation is further taught by example in figures 3c and 3d (e.g., see column 19, lines 40-54).

Chow may be silent or deficient to the further limitation of a TDD system operating at a lower part of a spectrum and a FDD system operating at a higher part of the spectrum.

Zimmerman teaches the further limitation mentioned above as shown in figure 2 on page 574 for a TDD system (i.e., ISDN) and an FDD system (i.e., ADSL).

Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include the further limitation of a TDD system operating at a

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lower part of a spectrum and a FDD system operating at a higher part of the spectrum. In particular, one skilled in the art would be motivated to use TDD at a lower bandwidth since ISDN operates optimally at a lower frequency (i.e., lower part of the spectrum) while FDD ADSL runs optimally at higher frequencies (i.e., a higher part of the spectrum). The suggestion or motivation for doing so would have been based on the power density spectrum of each known technology including ISDN and ADSL mentioned for both references. In particular, *Zimmerman* cures the above-cited deficiency by providing a motivation found in figure 2 at page 574 by disclosing that with the exception of ADSL signals, ISDN is limited to a bandwidth below 200 KHz. Thus the references in combination teach the further limitation of a TDD system operating at a lower part of a spectrum and a FDD system operating at a higher part of the spectrum.

In addition, *Chow* may not clearly teach the further limitation the transmission direction in at least one frequency band in the upper part of the spectrum of the wideband transmission system being *not* switched.

However, "A Multi-drop In-house ADSL Distribution Network" to *Chow* teaches the above inference in figure 3 on page 457 since the subchannels in Table 1 are above the interference in combining ADSL with ISDN.

Thus the examiner proposes to modify *Chow* with *Chow II* to further clarify that there are subchannels (i.e., frequency bands as shown in Table 1 of *Chow II*) above the frequency spectrum of ISDN. The above frequency bands are important because *Chow* teaches that discretion is used when applying multibit allocation in order to avoid

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crosstalk interference such as NEXT interference, see e.g., column 19, lines 15-48. Thus the higher bands would not have to be adjusted since no interference is present.

Hence Examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include the above limitation. In particular, one skilled in the art would have been motivated to combine the references in order to clarify that ADSL also uses signaling over subchannels which is above the ISDN frequency range. Specifically, *Chow II* teaches the above motivation e.g., in figure 3 and Table 1 on page 457. Examiner also notes a reasonable expectation of success since the references teach ADSL.

As to **claims 2 and 3**, see e.g., column 19, line 11.

As to **claim 4**, see figure 3b of *Chow*.

As to **claim 5**, see the rejection for claim 1.

As to **claim 6**, see the rejection for claim 1.

As to **claim 7**, see the rejection for claim 1.

As to **claim 8**, see the rejection for claim 2.

As to **claim 9**, see the rejection for claim 3.

As to **claim 10**, see the rejection for claim 4.

As to **claim 11**, see the rejection for claim 5.

As to **claim 12**, see the rejection for claim 6.

As to **claim 13**, see the rejection for claim 1.

As to **claim 14**, see the rejection for claim 2.

As to **claim 15**, see the rejection for claim 3.

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As to **claim 16**, see the rejection for claim 4.

As to **claim 17**, see the rejection for claim 5.

As to **claim 18**, see the rejection for claim 6.

As to **claim 19**, see the rejection for claim 1.

As to **claim 20**, see the rejection for claim 5.

As to **claim 21**, see the rejection for claim 6.

As to **claim 22**, see the rejection for claim 2.

As to **claim 23**, see the rejection for claim 3.

As to **claim 24**, see the rejection for claim 4.

As to **claims 25 and 26**, see similar reasoning for the rejection for claim 1.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (571) 272-3123.

The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DWF

Derrick W. Ferris
Examiner
Art Unit 2663


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